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ART. V. — *Les Marines de la France et de l'Angleterre.* 1815–1863. Par M. XAVIER RAYMOND. Paris. 1863.

IN our last number we observed, "It is agreeable to think that the present changes in naval warfare will produce the effect of equalizing the naval powers of the world, — at least in respect to defence." This is an opinion which, of course, would be very unwillingly accepted by a nation which has hitherto boasted that it possessed the command of the sea; which is conscious that it owes a great deal of its power to its apparent readiness to make good this boast on all occasions; and the effect of whose policy, according to one of its political writers, has been to create as many enemies as possible, to cast, not oil, but blazing petroleum on the troubled waters of European politics, and to betray friends and enemies alike. Thus, a writer in a late number of Blackwood's Magazine very naturally insists that England has lost no advantage by the introduction of iron-cased ships and heavier artillery than any hitherto used; that her resources and wealth, far exceeding that of other nations, enable her to build and equip a fleet of the present day, or to replace such a fleet, if lost or seriously damaged in action, with incomparably greater ease and speed than can be done by any other people; and that she is better able to bear the enormous cost of the present system of warfare. And an earlier writer in the Edinburgh Review, in speculating on the effects of recent changes on the maritime supremacy of Great Britain, adopts the view of M. Xavier Raymond, that, as money is the sinews of war on sea as well as on land, Great Britain, by means of her wealth, her mechanical skill, and her vast manufacturing and shipbuilding establishments, may still wear her dignities without co-rival. But the argument of M. Raymond is curiously infelicitous, and is stated after the manner of an advocate, and not of a judge. "How many of the iron-clad frigates of to-day," he remarks, "would be necessary to produce the same results as the great fleet of Nelson and of Hyde Parker? Would not two be enough, and three more than enough"? And further on he adds, "In the first place, the fortifications, which in 1801 contributed to the defence of Copenhagen, have lost all their efficiency against iron-clad vessels." But M. Raymond does not know what we know by experience, that a single monitor of the class of the Dictator or the Puritan would be more than a match for the present casemated fleet of Great Britain. And he did not know probably, when he wrote, that those very fortifications, of which he speaks so disparagingly, may be protected by iron armor, and may be surmounted and defended by movable turrets.*

There is a loose way of speaking of iron-clad vessels, as if they were all alike, and were intended to perform similar services; but the differences among them, not depending on size, but only on offensive and defensive qualities, are greater than any corresponding differences among wooden vessels. Commodore John Rodgers, the hero of the Weehawken, has pointed out the fundamental distinctions in his admirable letter of April 7th to the Secretary of the Navy, on the subject of armored vessels. He divides them into two classes, and points out their defects and advantages, selecting for his illustrations the best examples of each class.

Though England and France have been running a race since the beginning of the year 1861 in building wooden and iron iron-clad vessels, some of which, like the Royal Sovereign, were, as was also the case with our Roanoke, old wooden screwships cut down for the purpose, while others were entirely new, yet neither of them, in all the varieties of plans adopted, have thought of constructing anything but sea-going vessels, and these, too, with a special reference to their capacity to encounter the armor-plated ships of the other. The question with the Englishman was, what is the progress of shipbuilding in France, and how far are we prepared to meet our ancient enemy, when this present gloss of friendship has lost its lustre, and the hereditary antipathy between the two countries breaks out afresh? When Sir John Pakington asked for an addition of two millions and a half sterling to the navy estimates for the construction of new ships-of-war, he is described by M. Raymond as rising from his seat with the manner and countenance of a man who is about to develop a mystery full of crime and horror, and as relating in a dramatic tone to his colleagues, that Admiral Elliott, who had been sent to France to inform himself of the state of the French fleet, had discovered in her arsenals ten new armored frigates in process of construction; and when Lord Palmerston sustained this extraordinary demand, he rested it upon the alleged fact (which we need hardly add was not accurately stated in the sense in which it was intended to be understood) that France already possessed thirty-seven armor-plated vessels of war. Well may poor M. Raymond exclaim, that he thinks it very hard that, when Lord Palmerston takes it into his head to extort money from Parliament, or when the alarmed imagination of Sir John Pakington calls out for an increase of the navy, France should be designated as the *Croque-Mitaine* whose projects, labors, and inventions are perpetually disturbing the repose of England; and that she should serve as the *echappatoire* to ministers, who, when they are called upon to render an account of wasteful expenditures and crude conceptions, answer the call by indulging in an harangue against their present ally.

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* Several plans for such works of defence have been presented to our Executive Departments and to Congress.

And the question with the Frenchman was, not whether his countrymen were endowed with the genius for the sea; but whether any British minister like Lord Palmerston should set up the audacious pretension, that it belonged to him to prescribe their field of activity upon the great oceans. "Far from this," says M. Raymond; "we assert our right and our duty to continue to make use, to the extent of our ability, of that which Providence has given to all people for their common enjoyment; we will no longer lend an implicit sanction to errors which, by being constantly repeated, end by being accepted as truths; we will no longer yield to the illusions, of which our neighbors, intoxicated by the fumes of a national *amour-propre*, have been for some time the dupes; we will maintain the superiority of our rifled guns and armored vessels over theirs; and finally, we will not suffer it to be admitted among the nations, that our arms are inferior to those of any people, because at the bottom of this argument there lies a question of moral influence, which we must not allow ourselves to be deprived of." Admitting the superiority of the English, and admitting the great distance which is yet to be travelled to overtake them, still the serious desire of the Frenchman is to establish equality, fully recognizing the fact, that hereafter neither during peace nor war can a nation be counted among the great powers, unless she is possessed of an efficient navy. And this desire to occupy the place which belongs to France upon the sea, to shake off the painful sense of inferiority left by the naval disasters of the first Empire, to rise to an equality that will satisfy the ambition, the patriotism, and the security of the nation, like the corresponding feeling on the other side of the Channel, wears its own badge of grief and bitterness. Is it sufficient, says M. Raymond, to repeat the famous *Civis Romanus sum*, to be still singing *Rule Britannia* at the very time when they are constructing vessels no longer able to *rule the waves?* "Ce chant qui représente le Créateur comme heureux d'avoir créé le monde, parce que cela lui a fourni l'occasion de créer l'Angleterre, à laquelle il s'empresse de donner, comme témoignage de sa satisfaction, l'empire absolu des mers au détriment des autres peuples." (pp. 10, 11.) We give this in the original, lest some of the wit and temper should evaporate in the translation, and we may remark by the way, that this claim of Britannia to *rule the waves* is received much more philosophically by ourselves than by France, probably because, when she ceases to do so, the sceptre will pass into our hands.

We go back to our original statement, the truth of which has been made apparent, that France and England have increased, and are now increasing, their navies with an almost exclusive regard to each other. If any proofs of this were wanted other than those already cited, we might refer to some of the recent discussions before the Royal United Service Institution. The truth is, that while France is a perpetual bugbear to England (*un epouvantail de l'Angleterre*), she at the same time regards her rival with a mixture of jealousy, resentment, and apprehension, which make her

> "Willing to wound, and yet afraid to strike."

Accordingly, these two nations have limited their constructions mainly to the first of the two classes into which Commodore

John Rodgers has divided the iron-clad vessels-of-war now in use, and which he denominates the Ironsides class, taking that vessel as its type. The vessels belonging to this class need not vary in any essential particulars from the ordinary model. An increase of size is required to meet the additional weight, and there are some modifications of shape and construction due to the addition of the ram, and to the protection which it is expedient to give to the rudder and propeller. But these vessels have ample quarters for the crews, free access to the decks, the usual light and ventillation, and guns in the common broadside battery; they also are, or may be, propelled in part by sails. They are designed to keep the sea, to take the place of the old line-of-battle ships, to maintain or dispute the possession of the English Channel, and on them England hopes to carry her meteor flag once more over those seas that have so often echoed to the thunders from her native oak. It may be said of these casemated vessels, speaking in the most general way, and without reference to the armament, that they are ships of the old model protected by iron armor. In fact, as we have before said, several of the English ships are really old vessels razeed and plated.

The vessels of the second, or Monitor class, as it is designated by Commodore Rodgers, differ entirely from those of the first class. The fundamental conception of them is different; the plan of construction, and the modes of offence and defence, are different; and these differences are so intrinsic and essential, that the two classes admit of no comparison except as to the results of their work. In the Monitors the guns are reduced in number, and increased in size; they are taken from the broadside or beam-ends, where they are supported upon the frame or ribs of the ship, and carried amidships over the line of the keel, on which, as well as on the main and auxiliary kelsons, they find their basis, being upborne by the whole of the floating power of the vessel, and sustained by all her strength. The Monitors are placed so low in the water that they have the least possible deck and side surface to be plated, and consequently that plating can be for any given tonnage the most impenetrable. In addition to this, the offensive armament of the Monitors is placed on a circular chamber of the smallest admissible dimensions; and here again, the plating, being concentrated, requires to be thicker. To use Commodore Rodgers's precise language, "In the Monitors, concentration of guns and armor is the object sought. In them, the plating is compressed into inches of elevation; while in the Ironsides class it is extended over feet; and the comparatively numerous guns distributed over the decks of the Ironsides class are moulded into a few larger ones in the turrets of the Monitors."

The two prominent results of these changes in the plan of construction are, that the Monitors carry fifteen-inch guns, which no vessels carry in broadside; and that the armor of the most recent of them, the Dictator and the Puritan, for example, is nearly three and a half times thicker than that of the Warrior, or of the Gloire, and nearly three times as thick as that of the Minotaur or Magenta. Target experiments, "if target experiments are reliable, prove that a shot from a fifteen-inch gun will crush in the sides of any of the casemated vessels in Europe or America. A single well-planted blow would sink either the Warrior, Gloire, Magenta, Minotaur, or Bellerophon. The Dictator, of three thousand tons, has armor thick enough, I believe, to withstand fifteen-inch guns."

Commodore Rodgers sums up his conclusions as follows: "I think that the Monitor class and the Ironsides class are different weapons, each having its peculiar advantages, — both needed to an iron-clad navy, — both needed in war; but that, when the Monitor class measures its strength against the Ironsides class, then, with vessels of equal size, the Monitor class will overpower the Ironsides class; and, indeed, a single Monitor will capture many casemated vessels of no greater individual size or speed; and as vessels find their natural antagonists in vessels, and only their exceptional antagonists in forts, it must be considered that, upon the whole, the Monitor principle contains the most successful elements for plating vessels for war purposes."

And these conclusions we accept. They are founded upon correct views, and sustained by experience. When Commodore Rodgers spoke of "a single well-planted blow," he no doubt remembered that the shot by which he disabled the Atlanta struck at such an angle that, although it crushed the casemate, it did not pass through it. These conclusions justify us in maintaining that the effect of the present changes in naval war is to equalize the powers of nations, at least in respect to defence. Of this our own case is an example. We have no means of coping on the sea with the existing navies of Great Britain or France; that is, we cannot match them ship for ship and gun for gun; but we possess means of defence in our Monitors which will be sufficient to protect us from aggression at home, while we are preparing the means of encountering those navies abroad, should that necessity arise.

This question has another bearing, — that of the blockade. In the existing state of things, an attempt on the part of Great Britain to renew Lord Collingwood's blockade of the French fleet off Toulon would hardly be repeated, or, if repeated, would probably be attended with the most disastrous consequences. Blockading is a service which the best-built wooden ships, unencumbered by a superfluous weight, find most trying to their strength. Setting aside all that relates to sailing ships as having no longer any value, we may trust to our own experiences of blockade by steam. If the blockaded party possesses one or more vessels intrinsically superior to all the vessels of the blockading fleet individually, and if this party is gifted with an ordinary share of enterprise, it would be strange indeed if the innumerable chances of weather and accident did not afford occasional opportunities for successful sallies; in which we may suppose that the assailant employs his best ships. For it is not to be forgotten that the employment of the best ships in such a service as that of the blockade encounters the most serious objections. If casemated vessels are very heavily plated, experiments have shown that they soon will be disabled by bad weather, and if they are not heavily plated, they are unsuited to encounter those of the blockaded party, which, not themselves exposed, will only seek an engagement under the most favorable circumstances. These conclusions are confirmed by experiments with the Warrior and Black Prince, both of which vessels are relieved from the weight of armor at the two extremities. We are not informed of the details of their trial cruises, but enough has leaked out to satisfy the public that they are not useful sea-going vessels; and this opinion is further confirmed by the changes made in the subsequent constructions. One of these changes is well worth noticing, and that is in the size. The displacement of the Bellerophon exceeds that of the Warrior by many tons. This increase of size carries with it the necessity for building the hull of iron, and the rapidity with which the iron is covered with the sea-grasses and the sedentary crustacea disqualifies vessels constructed of this material for very active service. During the eight or ten months that the French frigate La Couronne remained in the port of L'Orient, receiving her armor, setting up her engine, getting on board her guns, her bottom was so much covered with mollusks and vegetable matter, that she fell far short of expectation in the speed attained on the trial trip. M. Raymond mentions seeing at the London Exhibition a striking example of this case of deposit; it was a detached fragment of the incrustations which had attached themselves, in a period of four months, to the hull of the Adventure, an iron transport of the English navy. These incrustations were between ten and twelve inches thick. No composition or invention hitherto discovered has remedied this evil. A certain preparation of zinc, which has been warmly recommended, has been fairly tried, and has entirely failed. The only resource is to dock the vessel, and remove the excrescences by hand, — a mode of proceeding always difficult and protracted in the case of these very large vessels, and impossible in any part of the world except on the coast of Euope, and on that of the Northern States of America.

M. Raymond would have us believe that these objections do not apply to the iron-clad vessels of the French navy, which he asserts have sustained every trial at sea with perfect success. Without entering into a discussion of the real merit of the experiments with La Gloire in the Mediterranean, or of the summer voyage of La Normandie to Mexico, &c., we have only to refer to the actual results of blockading service, when kept up for a long time. The sufferings and complaints of Collingwood before Toulon are repeated by our own Admirals before Wilmington, Charleston, and Mobile; and it is a simple absurdity to maintain that a service, which exhausts the strength of wooden vessels not surcharged by their armament, could be performed by the same or similar vessels, if to this armament were added an iron plating of the proportionate weight of one thousand tons to a displacement of six thousand tons.

We may pass, without enlarging upon this absurdity, to another difficulty attending the employment of casemated vessels on this close and arduous duty, — we mean the difficulty relating to hygiene. The chief part of our own experience in this very interesting question is limited to vessels of the Monitor class; and by this experience we are every day profiting. Dr. Wheelan, the Chief of the Bureau of Medicine and Surgery of the Navy Department, has kindly permitted us to examine the voluminous reports of the medical officers of the navy in relation to this subject. But since what we have to say relates rather to the iron-clad ships of France and England than to our own turreted vessels, we prefer to introduce the following extract from an unpublished paper, written by Dr. Wheelan himself.

> "The sanitary condition of iron-clad vessels of war is a subject which has engaged, and continues to engage, the most earnest attention in Europe, and, notwithstanding the many and ingenious appliances for ventilation, I should judge from reports and publications, that no entirely satisfactory results had yet been attained abroad.
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> "I have seen recent allusions in French papers to the Normandie, which formed part of the expedition to Mexico; and though constructed with all the skill and science which an enlightened nation could apply in so important a problem, she is regarded as a sanitary failure. She proved so sickly, that it was found necessary to remove the crew, on two occasions, in a brief cruise, and she is now on her return to France.
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> "I know nothing of the construction of the iron-clads of the navy, and hence the remarks I make in reference to this class of vessels have no special or individual application.
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> "It seems to be conceded that, with *equal* ventilation, a steamer is more unhealthy than a sailing vessel, for the simple reason that the internal heat of the former gives activity to the sources of impurity and disease inseparable from the close aggregation of men. It is asserted that the almost unavoidable accumulation of offensive rubbish under the machinery adds to the impurity of the close air in the between decks.

"The increased mortality in the English navy, from yellow fever, during late years, is found in steamships; and the same is said to be true of our own mercantile marine. We all remember the fearful outbreak of yellow fever on board the Susquehanna a few years ago, when as far as the eye could reach she was a model of cleanliness and order.

"The London Times stated, not long since, that seventy tons of bricks and mortar have been built into the bottom of the Warrior, to prevent the lodgment, and consequent stagnation, of bilge-water. Allusion is frequently made to the submergence of vessels of the Monitor class, as tending to multiply the conditions of unhealthiness.

"It would appear that, while the new styles of vessels may add to the power of the navy, they combine so many unfavorable elements, in high temperature, defective ventilation, the tendency of their walls to accumulate and store up heat, their submergence and exclusion of light, that it is hardly to be hoped we can escape a general deterioration of health, and a large sick list, with any of the ordinary means at our command."

Even M. Raymond, who writes in the purest spirit of vainglory, and represents everything *couleur de rose*, admits that on board La Normandie, while in the Northern tropics, there were complaints of the heat, although but two furnaces were lighted. He attributes these complaints to the necessity for keeping the gun-deck ports closed. There were only three days, he adds, when all the ports could be kept open fore and aft at the same time. This was in consequence of the rolling, though La Normandie is described as not being an exceptional case in this particular. "I have known," said one of her officers, "other vessels that rolled more, but I never knew any whose motions were more easy." To this deficiency of fresh air may be added the evils arising from the want of light, a requisite, though less indispensable than air, to a condition of health. The frigate La Couronne is spoken of as being very faulty in this particular.

If, for a summer cruise in the tropics "avec belle mer et jolie brise," we substitute a winter's gale on our coast, we imagine the result would be still more unsatisfactory. This holiday service will not be accepted by nautical men as a proof that the new ships are equal in all respects to those which they have replaced. Even their most ardent admirers admit that their pitching and rolling motions are so violent, as to wear out the crew, and to interfere with the accuracy of the fire from the battery. They admit that they are disagreeable habitations, deficient in air and light, which can only be supplied at the expense of their defensive qualities, and that these defects give rise to insalubrity. They also admit, that they are very costly, and that they carry in them the seeds of their own destruction, which begin to germinate at the very moment they are put together.

In presenting our views, we have no intention of arguing the matter. If these views are correct, it will be no disadvantage to us whatever, that our enemies do not admit their correctness, or act in opposition to them. We are not writing either to flatter the national vanity, or to maintain a cause, but we are employed in the consideration of our situation relatively to other naval powers, and especially to those which have been balancing in their minds the question, whether they would be accounted wise in their generation if they took part in our national troubles, ranging themselves on the side of human slavery against the side of human freedom.

There are some views concerning the best manner in which a harbor may be defended by vessels of the Monitor class against casemated vessels, which are strictly professional, and need not therefore be broached in this place; but we have enlarged somewhat upon the main considerations, because our first business is defence, and the problem has hitherto been solved favorably to us. We might push this topic further, and discuss the possibility, and even probability, of using Rodman's twenty-inch gun in our Monitor turrets, as well and as easily as in our forts. We say as easily, for the invention of Mr. Eads of St. Louis has rendered the manipulation of two fifteen-inch guns in an Ericsson turret as easy as that of a twelve-pounder howitzer on an open deck. The sudden development of a genius for naval construction and for naval war in the West, of which Mr. Eads is the eminent representative, is certainly one of the most curious results of the war. The workshops and building-yards of Cincinnati, Pittsburg, and Carondelet have risen at once to the full usefulness of complete naval establishments. This fact is cheerfully recognized by Admiral Porter in his report on iron-clads.

"If it is the intention of the government to build any more Monitors, or, indeed, iron vessels of peculiar construction, I would beg leave to recommend that a fair portion of patronage be given to the Western foundries. I believe the work will be done cheaper and better than it can be done elsewhere. Vessels of any size can be built in any part of these rivers. The senseless cry about the want of water here or there should not be taken into consideration for a moment, for at low water the whole Mississippi is a chain of sand-bars, and no place possesses then any advantage over another. There is less water below Cairo than there is at Cairo and neighborhood, and at dead low water a boat drawing six feet cannot get above Helena, while for eight months in the year a vessel drawing ten feet could traverse nearly the whole length of the river. It matters little, then, what point on the river is occupied as a building-point. Proper encouragement on the part of the government would have vessels built by private enterprise cheaper than they could be built at government works out here, which in this region would cost large outlays before they would be ready to build a steamer.* It is astonishing how little these Western manufacturers require to commence operations with; and while the government officials would be laying out the yard to work in, they would have the vessel built."

The latest constructions of the Monitor class on the Western waters are entirely successful in all respects; but in none more than in the mode of working great guns in the turret. Before Mr. Eads's invention was applied, not less than twelve men were required to work each one of the fifteen-inch guns, and now one man can work two fifteen-inch guns with increased certainty and precision. Since Mr. Eads took out his patent, Chief Engineer J. W. King of the Navy has sent us a drawing of his arrangement for accomplishing the same object. These great guns, it must be observed, are altogether the friends of the weak, and on the side of defence. They may not deprive a great naval power of the excellence of having a giant's strength, but they defeat the tyranny that would use it like a giant.

If it were not to consider too curiously, we might pause here to consider the ultimate effect of these great guns upon *casemated* vessels, provided the former continue to be successfully employed in naval war. When armor ceases to be a protection, it becomes a fatal encumbrance. It was not until two centuries after the invention of gunpowder, that fire-arms came into complete use, and decided the fate of battles. Up to that period the long bow and the pike disputed the field with the musket, and seem to have been in some respects the more formidable weapons. It was not until after the battle of Fontenoy, in which the cannon made such terrible havoc with the English column, and commenced the defeat which Lord Clare, leading the hearts that were burning with the "treasured wrongs of fifty years," turned into utter rout and confusion, that the pike finally disappeared. But just in proportion as fire-arms advanced toward perfection, the cumbrous defences of the armor worn by knights and men-at-arms were laid aside.

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* We take the liberty to differ from the gallant Admiral in his estimate of the capacity of private yards. Private yards employed for building public vessels become in fact, and in expense, *public* yards under private management.

This, however, was a gradual process, and the result of long experience. The first consequence of the introduction of gunpowder was an attempt to strengthen the armor to a degree that would resist the force of the bullet. M. de la Noue, in the fifteenth Military Discourse, quoted by Meyrick in his "Antient Armor," says: "There has been good reason, from the violence of the *arquebuses* and pikes, to render the harness more massive, and of superior proof to what it was." In a note, and subsequently in the text, Meyrick speaks of one of these suits being so immensely heavy, owing to the thickness of the breastplate, which has been proved to be bullet-proof, that it could not be worn a whole day. And in a "schedule," drawn up in the beginning of the reign of Charles I., "containing the new rates and prices of the several parts and whole armes, both for Horse and Foot,"—"A breast of pistol-proofe" is set down at eleven shillings (A. D. 1629).

The changes, which it took scores of years to bring about at that early period in the use of fire-arms, find their corresponding successions in as many days in the recent series of rapid revolutions in naval armament. The Warrior, with a plating of four and a half inches, is hardly launched before she is followed by the Minotaur, with a plating of five and a half inches; and the Minotaur in turn is succeeded by the Bellerophon, with a plating of six inches. We, on our side, made the walls of the first Monitor turret eight inches thick, and of the last, fifteen inches thick. If, as we believe, and as our experiments authorize us to conclude, the armor of the Bellerophon, with all its backing, is not proof against the fifteen-inch gun, and the fifteen-inch gun can be carried and worked at sea, then she would be better without her armor than with it. Many a knight and man-at-arms, after being wounded by a ball from a gun, died, not in consequence of his wound, but of his armor, before experience had fully established the fact that a breastplate had ceased to be a protection. But when that fact was established, armor came to be worn only as an ornament, or for special purposes, as for instance the defence of the head against the sabre-cut.

We may follow out this idea with modesty enough, and likelihood to lead it, and apply it to the casemated vessels of the day. If experience should prove that they cannot be made impenetrable, the armor will be laid aside, or used only for special purposes; but wherever these changes may lead, the new prow will probably be retained as a means of offence, and it is very certain that the mounting of guns on a single deck has permanently taken the place of the old batteries of two, three, and four decks.

The reader will observe that these remarks are confined to *casemated* vessels, to which they are applicable on the admission that these vessels are indefensible against guns in actual use. But they are not applicable to the Monitor class of vessels, because this class is not embraced in that condition. The present indications are that the Monitor class of vessels will, in some form or other, continue to be used for harbor defence for an indefinite period. They are the most efficient floating batteries that have ever been invented; and, whatever may be the advances in gunnery, it is much more probable that the Monitors will be strengthened to meet those advances, than that they will be abandoned.

If we had leisure, we might stop to utter a word of lamentation over the condition and disappearance of those noble structures, the old sailing frigates and ships-of-the-line, which formerly constituted the pride of navies, were the gems of the naval constructive art, the ornament and defence of the sea, the glory of nations, and the terror of evil-doers. How have the mighty fallen! Those ships that once carried so proudly the flags of admirals and commodores along the coast and into the ports of every country and people, civilized or barbarous, have sunk now into the humiliation of store-ships, hospital-ships, and receiving-ships, from which they are destined never to rise.

It would seem ungracious, if not ungrateful, not to say a single word about the good service they have performed in this war of the rebellion, in which they have acted so conspicuous a part; their deeds

> "Are registered where every day we turn
> The leaf to read them."

The stately and triumphant march of the Wabash and her companions before the batteries of Port Royal; the daring passage of the forts on the Mississippi, and subsequent encounter of rams, rafts, fire-ships, burning vessels, and water batteries,—not more brilliant than successful; the persevering and steady conflict, of two days' duration, with the batteries at Roanoke Island; the gallant and fortunate dash upon Newbern,—have secured to these wooden vessels a place in the nation's grateful remembrance.

It would be strange if the present exigencies had not disclosed the occasion and necessity for some naval reforms. We cannot fail to admit that, at some future, and we hope not distant time, we are to occupy a more commanding position among the naval powers of the world. It may perhaps cost us a struggle to regain our commercial importance, and it will certainly cost us so much of an effort as consists in the maintenance of a respectable navy, to resist the influences of foreign jealousy, when our rightful place as a nation with internal peace has been resumed. We must begin therefore to look with a more careful eye to the *personnel* of the navy; it must be made an object of legislation to identify the seamen with the service in something the same manner, though not perhaps to the same extent, as the officers. Long and faithful service should carry with it recognized distinctions and substantial benefits. These are the universal reward of industry and fidelity in all professions and occupations, leaving out of view, of course, those accidents or calamities which we call providential. The fortunate officer in the navy reaps this reward, and so also should the successful seaman. The acts of the state are founded upon principles of justice; and not only principles of justice, but the dictates of prudence demand that the strongest inducements should be held out to the seaman to unite his interests, his fortunes, and his purposes with the navy during the whole of his life. And this is only to be done in one way, and never has been attempted in any but one way; and that is, the gradual amelioration of the seaman's condition, so that he may be able to look forward with as much certainty as any other man to the recompense of the good and faithful servant. The advantages or rewards ought not to be of a kind to lessen the self-respect of those who receive them, nor ought they to be conveyed in such a way as to be offensive to those from whom they are withheld. We are a republican people, and need not use towards our public servants such terms as imply a marked inferiority. Then, too, we have seen very lately the force of the navy very much reduced, and its efficiency impaired, by the unlooked-for effect of the enrolment act, by which the army was recruited at the expense of the navy. Crises of this sort should be anticipated and prevented, otherwise they might occur at a moment when they would be fatal to the honor and safety of the country; and they can be prevented only by judicious legislation. This would act as a constant maintaining power, not only keeping full the complements of our ships in commission, but qualifying us to meet any sudden emergency by a new draft. Having laid down the principle on which legislation ought to be based, it would be premature to enter upon the consideration of the practical details by means of which it is developed. It is enough to say, that we should propose to confine ourselves strictly to the analogies and usages of our own navy, — not looking abroad for examples which are uncongenial to our way of thinking. But first of all, the public mind is to be impressed with the want of reform in these respects; the indispensable necessity of it is to be established and acknowledged; and when this is done, the required measures will find a ready interpretation in the ordinary course of legislation.

If we add another word in the way of argument, it is not so much for the purpose of convincing the public mind, as of commanding the public attention. The power of a navy finds its real exponent in the men of the navy, and these men must be possessed of a special development and training. One quality resulting from this special development is the quality of being seamen; a quality that is indispensable. But another and equally important quality is that of being naval seamen. The crews of our men-of-war must not only be familiar with the arts and practices of the sea, and with life upon the ocean; but they must be skilled in the use of the arms of a man-of-war; their military sentiments must be cultivated; their patriotism and pride of country must be aroused; and they must belong to the sea by all the ties, habits, and associations which a naval life engenders. In the war of 1812, the second war of our independence, (when our population numbers sixty or seventy millions, and our resources are proportionately developed, the numerical order of these English wars for American independence and for American liberty may be interrupted,) Commodore Porter carried at his masthead a flag bearing the motto, "FREE TRADE AND SAILORS' RIGHTS." In order that our navy should be efficient, this motto should be as well known and as dear to the men as it is to the officers of the service. The honor of the navy, the freedom of the seas, the protection of the national commerce,—these should be the almost exclusive objects of their devotion. And this is the very period of time for creating such a class of naval seamen. Many more men are now employed than could possibly be wanted in time of peace; and these men are, much the larger part of them, identified with the honor and character of the navy by their participation in the naval events of the war. When the reduction of the navy takes place, an opportunity will be afforded to select a sufficient body of men, who are thoroughly imbued with a love of the profession, who are impressed with its obligations, who are expert in its duties, and inspired with its sentiments. The sea is their home; and they will fight in its defence, as the soldier in defence of his home on land. If we neglect this opportunity to create a class of naval seamen, and to identify them with the service of their country, it will prove an almost irreparable loss,—a loss from which we can only recover by going through similar experiences, that is, by passing through a naval war, at the commencement of which we shall labor under the disadvantage of not having our ships manned by professional seamen.

The changes which are taking place so rapidly in naval art and warfare admonish us, that we cannot safely relax the training and discipline of our crews. We must keep them always in hand,—always instructed in the newest methods of working the great guns, whether smooth-bored or rifled, of handling the howitzers, and of exercising with the small arms. These changes extend to everything that relates to the construction, internal economy, police, navigation, management, and evolutions of ships of war. We are just in that state of transition, when, unless we exert a proper foresight, we are in danger of losing that fine type of manhood, the man-of-war's man. We willingly reconcile ourselves to the gradual disappearance of those traits of his character, and those habits of his life, which had their origin in the state of things that has now become obsolete; but we are eager to preserve the heroic elements of this class of men for the good and behoof of our country.

We have a brief word to say upon another necessity which has grown up during this war, and which proceeds from the recent changes in shipbuilding and the manufacture of cannon. We are neglectful of those joint commissions, freely created in England and France, for the purpose of testing the novelties of art and science, the good effect of which must be felt in two important directions;—one, the decrease of expenditures, the other, the employment of the best means and weapons. We cannot go very far wrong in saying, that, if some of these commissions in England are to be traced to the mistakes in the Warrior, and came therefore too late in that instance, they prevented other and similar errors, and supplied by wise experiment the wants of experience. To enter into this subject particularly, and utter freely the thoughts which prompt this opinion, would be to discuss what it is more judicious to pass over in silence. As an example of our meaning, however, we may mention the desirableness of establishing, by means of experiments conducted by a joint commission composed of officers of the army and navy, fixed rules with regard to the size of the grain and the weight of the charge of the powder used in our guns of the largest calibre. In the army fifteen-inch gun "mammoth powder," differing from other powder in the size and hardness of the grain, is the only powder used. In order to secure progressive combustion, the grain must be so hard as not to be permeated by the gas developed in its combustion. The object aimed at by the use of this powder is to impart a given velocity to the shot, with the least possible maximum strain or pressure of gas upon the gun; or to save the gun at the expense of the powder; — since it will require a larger charge of this than of ordinary small-grained powder to impart a given velocity, there being a portion of each grain of this powder blown out unburned. But the preservation of the gun, and the safety in its use, are believed to more than compensate for the additional expenditure of powder.

The navy fifteen-inch gun is shorter in the bore than that of the army, and therefore requires the use of a smaller-grained powder, or of larger charges, to impart a given velocity to the shot.

The question, whether there is not a combination or mixture of these two kinds of powder which is better than either of them separately, or whether one kind is not uniformly preferable to the other, is one which a joint commission would settle immediately; and it would seem the most sensible thing in the world, that, at the time when we are expending such large sums for powder, we should take pains to ascertain which is the best kind. This undoubtedly is the plan of proceeding we should adopt in our private affairs, and we should adopt it because it is the most expedient, and the most in accordance with sound judgment.

There is another topic which engages the earnest attention of the department and of the thinking men of the service, concerning which it is very desirable that there should prevail a sound and active public opinion.

With the large increase of the navy, and its prospective establishment upon a basis almost exclusively of steam-vessels, the character and status of that class of its officers known as naval engineers is coming to be a subject of manifest importance. Engineers were first commissioned by an act of Congress approved August 31st, 1842. In 1845, they had little more than a nominal existence, there being less than fifty engineers to nearly seven hundred line officers. Even in 1855, or ten years later, the number of engineers had barely reached a hundred; although in January, 1861, immediately prior to the rebellion, the number had come to be about twice as large, the number of line officers remaining almost identically the same as in 1845.

The gigantic operations of the war have changed the relations between the line and engineer officers. On the first of January, 1863, there were over eleven hundred engineers, and nearly sixteen hundred line officers, including both regular and volunteer officers. On the first of January, 1864, the numbers were as follows: —

Regular Officers.

Line Officers	569
Engineer Officers	501

Volunteer Officers.

Line Officers	1493
Engineer Officers	1226

Or, there was a total of 1727 engineers to 2062 line officers.

But a more significant fact, and one which better illustrates the importance of this element in the naval service at the present time, is this. In the detail of officers, regular and volunteer, actually on duty in the various steam-vessels of the several squadrons, the number of engineer officers is practically equal to the whole number of line officers of all grades.

Of this arm of the naval service, now so conspicuous, and which, although a creation of troublous times, is yet so evidently destined to be substantially perpetuated, not to say further developed, what is to be the future status? Are naval engineers to be regarded merely in the light of experts more or less practised in driving the machinery of steam vessels of war, with little, if any, education in the general principles upon which the economics of naval machinery are based? Or are naval engineers not only to be skilled in the management of naval machinery, but professionally educated in the sciences and arts involved in its construction and use? Undoubtedly there are persons, and those whose opinions are entitled to some consideration, who believe that the naval engineer would be better qualified, and more likely to become a really practical man, upon the former than the latter basis; but it is equally certain that there are those whose opinions must be regarded as enjoying a much greater authority, who believe that the naval engineer is not disqualified for useful practical service by possessing a sound knowledge of the principles which exercise more or less control over his professional operations. The question is, however, hardly deserving of an argument; and if it were, it would seem to be rapidly passing out, if it has not already passed out, of the region of practical discussion. This is so, first, because we already count some of the ablest and best-educated engineers of the country among the officers of the service. Our standard has been created, and it is a high one. To neglect the education of those who are hereafter to occupy the position of chief engineers would be an act of retrogradation and debasement. It is so, secondly, because there is an increased demand, not merely for skilful managers of the complicated and costly motive machinery required in modern vessels of war, but for capable designers of such machinery. The demand is not alone for the capacity to copy, to imitate, but for the ability to compare, to estimate. The designing and superintending of the construction of naval machinery, alike with its management afloat, particularly in using it with the greatest efficiency for given supplies of material, must make extensive demands upon the scientific and technical attainments and intelligence of naval engineers. Nay, more, it is quite evident that the new elements of modern naval warfare are to add still further to the professional responsibilities of these officers. The construction of the hull in iron vessels, the adaptation of armor, and the adjustment of the various defensive capabilities of armored vessels, the construction of ordnance machinery for handling and training heavy armaments with rapidity of movement and economy of hands, the construction of ventilating machinery, not to mention other particulars, point to a large domain in the field of naval engineering, and to the need of the highest order of professional qualification on the part of those who are to be charged with these increased responsibilities.

There can be little doubt that the naval engineer is destined, by the inevitable force of circumstances, to occupy a prominent and responsible position in the naval service; and the sooner this is understood, and provided for by legislation and executive action, the better it will be for the navy and for the country. It is well known that, owing to the emergencies of the unquiet time, unworthy persons have been admitted into the corps of engineers, and that the character of this corps, notwithstanding the distinguished names it embraces, has suffered accordingly. But it is gratifying to be assured that the proper steps for remedying this evil have already been taken, and that the general and special education of naval engineers is a project which the friends of the navy will not willingly drop until it has been carried into successful execution.

While we are engaged in the discussion of naval reforms and improvements, we may remark that there is one subject that engrosses a great deal of M. Raymond's attention which it would be hardly worth while for us to touch upon, except for the lessons of warning and instruction it contains. We refer to his critical examination of the administration of the naval affairs of Great Britain, during the greater part of the last half-century, by the British Admiralty. The topic is one which brings out the author's force of mind and character. He evidently is endowed with a large share of the administrative and executive ability common to most of his countrymen. His strictures seem to us to be just, whether we look to the constitution of the Admiralty or to the performance of its duties. We have only to turn to the current English publications and debates, to find that this Board, through indolence, or ignorance, or heedlessness, or obstinacy of opinion, not long since suffered the British navy to fall into such a state of inferiority to that of France, that England may be said to have been almost at the mercy of her rival. If an occasion for the employment of the navy in European waters had arisen at that time, the members of the Board must have sunk under the well-merited objurgations of their countrymen. We find the evidence of this, we repeat, among the English themselves. In fact, a writer, speaking from one of the high places of literature, says, "Most of us could listen with considerable equanimity to any strictures upon our Admiralty system." The obvious objections to the system are the absence of personal responsibility, the want of executive energy, and the singular exclusion from the councils and administrative control of the Board of all persons belonging to any part of the naval service, except the officers of the line. The consequence is, as M. Raymond shrewdly observes, that, in spite of the merit of the men of which it is composed, it is a body indolent and sluggish, endowed with an excessive power for the consumption of means, and of a relatively small capacity for the production of results.

The Navy Department of the United States is essentially different from the Board of Admiralty in its constitution, and in the adjustment and distribution of its duties. General Bonaparte wrote to the Directory, that for an army there was one thing worse than a bad general, and that was two good generals. This sentence contains the principle which forms the basis of the final constitution of our navy office, and which we may presume was derived from ample experience. We began in 1775 with the Marine Committee; in 1776 we created a Continental Navy Board; and in 1779 a Board of Admiralty. Then the government of the navy passed through several phases, till April, 1798, when a Navy Department was established at the seat of the government, with a Secretary of the Navy at its head. This state of things continued during the next seventeen years, and was interrupted by the appointment of a Board of Commissioners, composed of captains of the navy. In 1842 this Board was abolished, and abolished, as many of us recollect, after mature scrutiny, and with general approbation. It was at that time that the present organization of the Navy Department was created, for the avowed purpose of bestowing upon the business of the Department all the advantages of the strictest personal accountability, and the most direct exercise of personal authority. Subsequent experience, and the enlargement of the sphere of duty of the navy, led to a reorganization of the Navy Department about two years ago, in which the same principles were strictly adhered to, and more fully applied.

Regarding this act of reorganization as a measure not likely to be lightly disturbed, it may be well to add a word about it. It distributes the business of the Navy Department into eight Bureaus, the act of 1842 having provided for five only. The chiefs of these Bureaus are selected with reference to professional adaptation; thus avoiding the glaring absurdity of placing a line officer of the navy at the head of the Bureau of Construction, which still forms one of the objectionable features of the English system (Admiral Robinson being at this day the director of naval constructions under the title of "Comptroller of the Navy"), or at the head of the Bureau of Provisions and Clothing, as was the case here between the years 1844-46. Another effect of this act of reorganization is the separation of duties having no affinity with each other, but having, on the contrary, a manifest want of union and relation, such as Ordnance and Hydrography, Steam-Engineering and Ship-Building. By means of this division, no one special subject is in danger of being crowded out of notice, of failing to receive proper attention, and of slipping away from the cognizance and supervision of executive authority, either because it is a specialty, like the Observatory and the Nautical Almanac, or because it is a temporary service, like a surveying or exploring expedition, or, finally, because it is essentially subordinate to weightier matters under the charge of the same Bureau.

Although the names given to the Bureaus point out the general scope and tenor of their duties, yet, by a separate provision of the law, the Secretary of the Navy is authorized to assign and distribute the duties of the Navy Department as he shall judge expedient and proper; and whenever it is shown that the business of the Department would be expedited by the removal of an establishment, an operation, or a supply from one Bureau to another, the change may be immediately made. In this manner the benefits conferred by the trials and observations of our chief instructor, experience, are enjoyed without difficulty. Again, it is provided that the duties of the Bureaus shall be performed under the authority of the Secretary of the Navy, and their orders shall be considered as emanating from him; thus, while there is no lack of executive energy, there is a responsibility of the chiefs of the Bureaus, of such a nature as forces them into constant and intimate communication with the head of the Department. Again, it is required by another section of the act, that all estimates for specific, general, and contingent expenses of the Department and of the several Bureaus shall be furnished by the chiefs of the respective Bureaus; thus making them answerable for a sufficient supply of the requisite means to support the navy, and for giving to those means the appropriate course and direction. Finally, it is ordered that the appropriation shall be under the control of the Secretary, shall be expended under his superintendence, and shall be kept separate in the Treasury; thus restoring again the chiefs of the Bureaus to that subordination to a common head which is the beginning of the wisdom of discipline, and preventing any improper, careless, or extravagant use of the public money. In short, in respect to all his duties, the chief of a Bureau stands alone in his responsibility; no one can share his moral obligations in this regard, nor shield him from the consequences of his own trespasses; while in the proper execution of those duties he is upheld by all the authority and co-operation of the Department. The result is simple, and may be stated in a few words. Should there occur in the administration and expenditures of a naval station, in the recruiting, payment, or discharge of seamen and others, in the construction and repairs of a ship or an engine, in supplies and equipment, in ordnance material, in the erection and management of naval hospitals, or in the purchase of provisions or clothing, any error, fault, or deficiency, not only must the record of it exist at the Department, but the individual through whose negligence, irregularity, or moral obliquity the offence took place must be so conspicuous from his situation, that he can be pitched upon without delay or circumlocution. And this being the case, if any suspicion of malpractice arises against the Department, the charge can be established if well founded, and if it be not established, it is because it is not well founded.

Before taking leave of M. Raymond, and dismissing our subject, we must briefly notice the seventh chapter of his work, in the latter part of which he treats of the relation between the naval power of Great Britain and her civil liberty. Here he writes not only with animation, but with a rapid and flowing style that possesses the charm of eloquence. It is truly said that the English navy is *par excellence* a national affair; that it is the focus in which converge the burning rays of British patriotism; and that it is one of the grand productions of British liberty. Thus far M. Raymond's sagacity penetrates, and thus far he sees correctly. But there is something beyond, which is veiled to the perceptions of a Frenchman. And that is the consideration of how far the love of the sea is the source of liberty, and the navy not less a cause than the result of free institutions. It would be no unpleasing task to pursue this thought through all the streams of English literature; to trace the connection between the spirit of generous elation and of conscious freedom infused into the minds of those who really love the sea, who, "footless and wild," traverse its great deserts, and, "hovering on untamed wing," visit its most distant boundaries, and that polity of which the fundamental idea is civil and individual liberty. This undertaking would carry us back to those remote periods of British history, concerning which we know less of fact than of tradition, when our remote predecessors drank

"Wassail! to every dark-ribbed ship,
To every battle-field!
So proudly the Scalds raise their voices of triumph,
As the Northmen ride over the broad-bosomed billow."

Great Britain is conscious that, in cultivating her navy, she is cultivating the freedom of the state. In the chorus of "Britannia, rule the waves," the answering verse is, "Britons never will be slaves." The love of liberty, and a share in the dominion of the sea, are indissolubly united and mutually dependent.

In fostering our naval power, therefore, we are at once gratifying the absorbing passion of our souls, the love of liberty, and giving security to those institutions which are both our safeguard and our glory, *et præsidium et dulce decus nostrum.*